

NEW SPECIES OF WATER BEETLES OF THE GENERA
ELMOPARNUS AND *PHENEPS* FROM SURINAME
(COLEOPTERA: DRYOPIDAE; PSEPHENIDAE)

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Abstract.—A new species of dryopid beetle, *Elmoparnus collinsae*, and a new species of psephenid beetle, *Pheneps antennalis*, from Suriname are described, illustrated with line drawings and scanning electron micrographs, and compared to related taxa. Notes on their habitats are provided.

Insect collections made during a research expedition to the Brownsberg Natuurpark in Suriname yielded numerous new taxa, distribution records, and biological data. The two new aquatic beetles described in this paper are examples of the rich and relatively unstudied fauna of the Guiana Highlands. Members of the genus *Elmoparnus* Sharp (Coleoptera: Dryopidae), previously known to occur from Venezuela and Ecuador to southern Mexico (Spangler and Perkins, 1977) are reported for the first time from Suriname. The genus *Pheneps* Darlington (Coleoptera: Psephenidae), previously reported only from Haiti and Cuba (Darlington, 1936), is now represented from Suriname by a distinctive new species described here. The newly discovered water-penny beetle has antennae longer than the body, a character previously not seen in known members of the family.

Elmoparnus collinsae Spangler and Steiner, NEW SPECIES

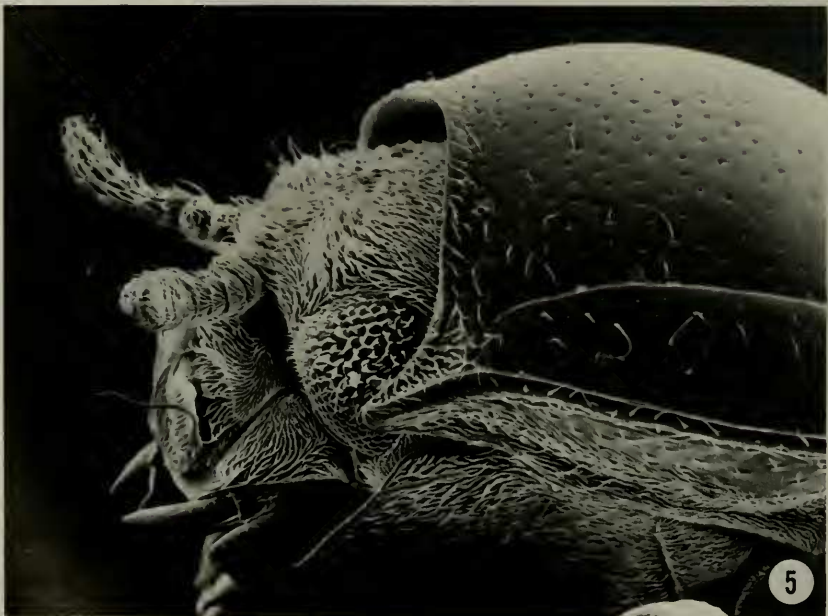
Figs. 1-9

With the description of this new species, the genus *Elmoparnus* is presently represented by six Neotropical species. Members of the genus may be divided into two groups—one group with antennae of nine segments and the other group with antennae of ten segments. The new species described below belongs to the group with antennae of nine segments; that group includes *Elmoparnus brevicornis* Sharp (1882), *E. pandus* Spangler and Perkins (1977), *E. mexicanus* Brown (1970), and *E. miltops* Spangler and Perkins (1977). Of the five species of *Elmoparnus* with antennae of nine segments, *E. brevicornis* may be immediately distinguished by the sublateral carina of the pronotum being confined to the basal two-fifths; the other four species of the group have the sublateral carina extending almost the entire length of the pronotum.

In the key to the species of the genus *Elmoparnus* by Spangler and Perkins (1977), *E. collinsae* keys to *E. pandus*. *Elmoparnus collinsae* (Figs. 1-9) may be distinguished from *E. pandus* by the following combination of characters: shorter total length (3.0 mm vs. 3.5 mm); distinct rows of closely spaced, moderately

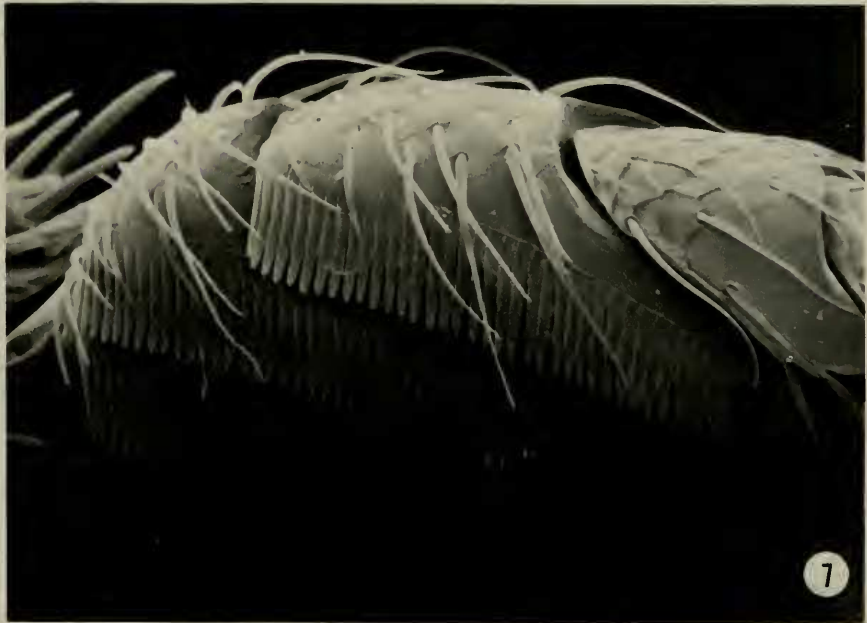


Figs. 1-3. *Elmoparnus collinsae*. 1, Habitus, dorsal view (27 \times). 2, Habitus, ventral view (27 \times). 3, Habitus, lateral view (27 \times).



Figs. 4, 5. *Elmoparnus collinsae*. 4, Head, ventral view (100 \times). 5, Head and pronotum, lateral view (88 \times).

small punctures alternating with widely spaced, coarse punctures on intervals (elytral punctures of *E. pandus* not in obvious rows); apicomедial margin of prosternum without a small toothlike projection; females with narrow, indistinct pubescent band bordering anteromedial region of metasternum between meso-



Figs. 6, 7. *Elmoparnus collinsae*. 6, Protarsus, male, dorsolateral view (190 \times). 7, Combs on protarsal segments 1-3, ventrolateral view (500 \times).

coxae (*E. pandus* with band twice as wide as that of *E. collinsae*); males of *E. collinsae* lack the notch found at the apical fourth of the foretibia of *E. pandus*; and differences in male genitalia as illustrated (Figs. 8, 9, *E. collinsae*; Figs. 10, 11, *E. pandus*).

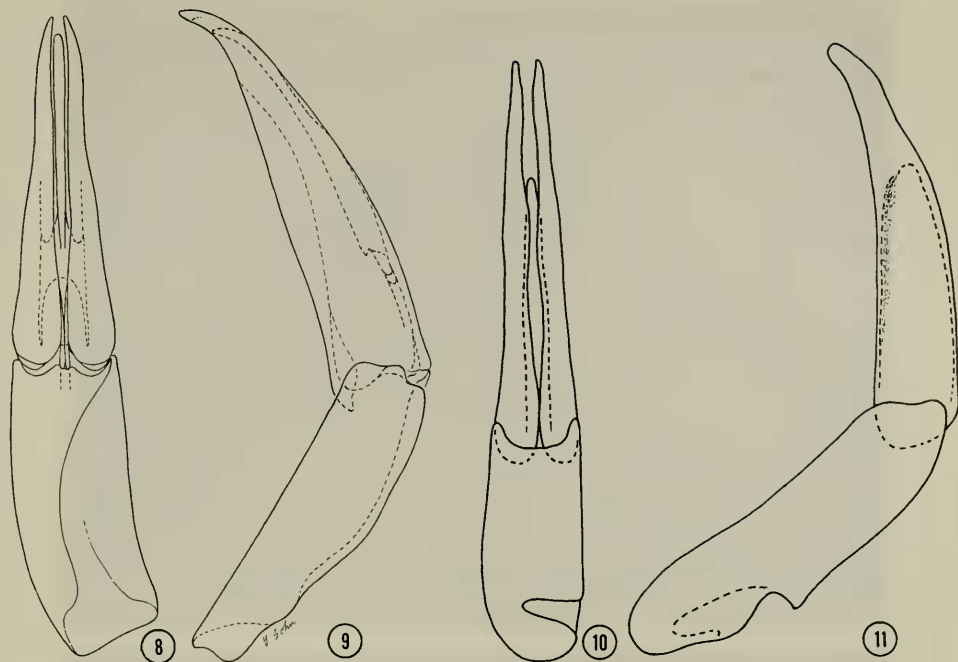
Holotype male.—Body form and size: Obovate; moderately strongly convex dorsally. Length, 3.0 mm; width, 1.5 mm.

Color: Black dorsally except antennae, clypeus, and labrum light reddish brown. Venter black with reddish tinge except all palpi, labium, apical margin of prosternum, tibiae, tarsi, and apex of last abdominal sternum lighter reddish brown.

Head: Finely microreticulate and densely pubescent except anterior edges of clypeus and labrum glabrous. Eyes with large, convex, pubescent facets. Antenna of 9 segments. Labrum (Fig. 4) moderately emarginate anteromedially; emargination bordered by a glabrous liplike area; upper edge of liplike area sharply, angularly demarcated; labral surface above liplike area densely microreticulate, with long, golden, upswept setae that dorsolaterally resemble a mustache (Fig. 4); anterolateral angles broadly rounded.

Thorax: Pronotum 0.8 mm long, 1.3 mm wide; widest across basal $\frac{1}{4}$; sides arcuate; anterior and lateral sides distinctly margined; posterior side not margined but strongly bisinuate; anterolateral angles strongly produced; apex blunt (concave at apex); sublateral carinae distinct, extending from base almost to apex at each anterolateral angle, diverging so that each carina at apex is only about $\frac{1}{2}$ the distance from lateral margins as at base. Coarse and fine punctures intermixed and sparse between sublateral carina and lateral margin; disc with coarse, moderately dense punctures, punctures separated by a distance equal to about $1\frac{1}{2}\times$ their diameter; intermixed coarse and fine punctures denser adjacent to lateral carinae. Prosternum with inclined sides densely pubescent; medial surface flat, glabrous and rather finely and sparsely punctate medially; punctures coarser and denser anteromedially and separated by $\frac{1}{2}$ – $1\times$ their diameter. Prosternal process flat, widening slightly between procoxae; sides moderately margined, arcuate, converging apically and terminating in a slender protuberance (visible when disarticulated); surface glabrous and very sparsely, coarsely punctate on level between mesocoxae. Mesosternum deeply foveate for reception of protuberance of prosternal process. Metasternum with inclined, densely pubescent sides; anteromedial region with narrow indistinct pubescent band adjacent to mesocoxae; medial surface flat, glabrous, punctate, with shallow longitudinal furrow on midline; punctures moderately coarse and denser along furrow on midline; punctures of intercoxal area sparse and fine, only anterolateral punctures coarse. Foreleg with tibia evenly curved from base to apex; without apical notch. Foretibia bearing a sparse, narrow tuft of moderately long, golden setae along posteromedial edge; tuft extends from apex to midlength. Protarsal segments 1 to 3 expanded (Fig. 6) and each bearing a large oblique row of dense, flat, golden setae on medial (ventral) surface (Fig. 7). Scutellum flat, broadly subtriangular; angles rounded; surface finely, sparsely punctate; punctures separated by a distance from 1 – $5\times$ their diameter. Elytron punctate; punctures coarser and denser than those on pronotum; disc with closely spaced, moderately small punctures in distinct rows, punctures separated by distance equal to their diameter; those punctures alternating with widely spaced, coarse punctures on intervals, punctures separated by $3\times$ their diameter; lateral margin with densely pubescent respiratory fovea at apical $\frac{1}{4}$. Sides of elytra diverging to basal $\frac{1}{5}$ then converging and arcuate to apices; sides strongly margined.

Abdomen: Sterna 1 to 4 microreticulate and densely pubescent. Apical sternum distinctly broadly notched apicomediaally; with dense pubescence along anterior



Figs. 8–11. Male genitalia. 8, 9, *Elmoparnus collinsae*. 10, 11, *E. pandus*. 8, Ventral view. 9, Lateral view. 10, Ventral view. 11, Lateral view.

and lateral margins; shiny, triangular, apicomedial triangular area with only a few, fine, golden setae and a few coarse punctures; punctures denser apically.

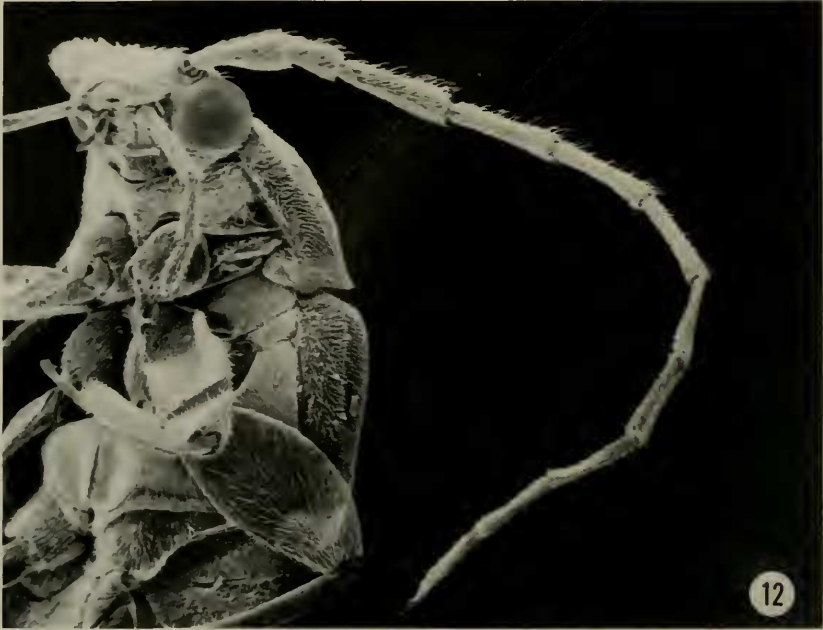
Male genitalia: As illustrated (Figs. 8, 9).

Female.—Similar to male with following exceptions. Upper edge of glabrous liplike area of labrum rounded instead of sharply, angularly extended medially; golden setae above the glabrous liplike area of the labrum sparse and about $\frac{1}{2}$ as long as those on male; 1st to 3rd protarsal segments not expanded and lacking the large oblique row of setae on medial surface; last abdominal sternum rounded, not notched apicomediaally.

Type-data.—Holotype δ : SURINAME: BROKOPONDO DISTRICT: Brownsberg Natuurpark, Witi Kreek, 200 m; 25 August 1982; W. E. Steiner/From leaf packs among rocks in partially shaded stream; rain forest valley/EARTHWATCH Suriname Expedition, August 1982; Collins, Early, Oberman, Pollock, Putnam, Steiner; USNM Type No. 100891, deposited in the National Museum of Natural History, Smithsonian Institution. Allotype and paratypes (3), same data as holotype.

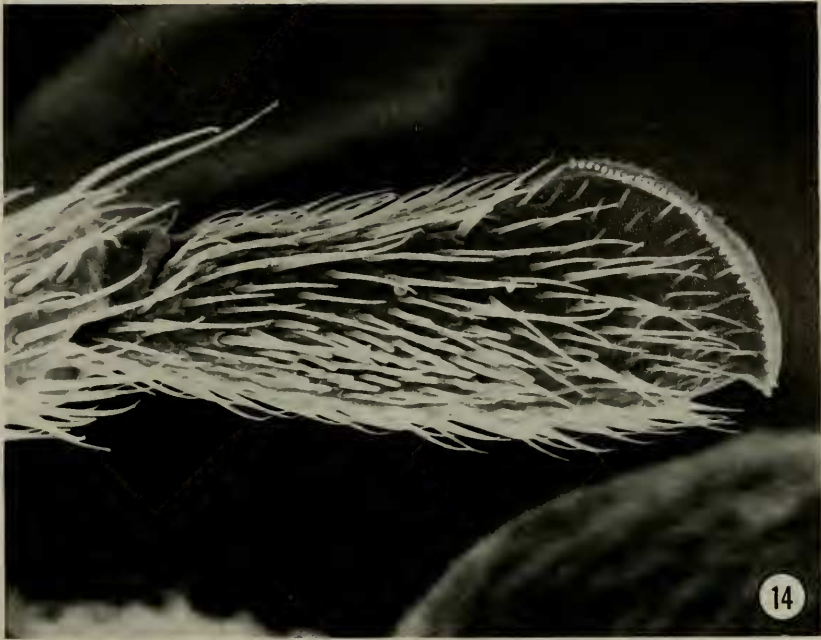
Etymology.—This species is named in honor of our friend Dr. Margaret S. Collins. This new taxon was obtained as a result of her initiating a field expedition to Suriname.

Habitat.—The specimens of *Elmoparnus collinsae* were found in packs of accumulated leaves and sticks between rocks in rapid water of a montane rain forest stream (Witi Creek) approximately 6–10 m wide. Beetles were taken in submerged



Figs. 12, 13. *Pheneps antennalis*. 12, Head and thorax, lateral view (42 \times). 13, Head and prosteronum, ventral view (90 \times).

leaf packs as well as leaf packs exposed to the air between emergent rocks. The stream was shaded by the forest canopy but the shallow rapid areas where the beetles were found received some direct sunlight during midday.



Figs. 14, 15. *Pheneps antennalis*. 14, Maxillary palpus, lateral view (600 \times). 15, Maxillary palpus, apex of last palpal segment, ventral view (1310 \times).

Specimens were taken by holding a small net immediately downstream from the leaf packs as the packs were dislodged and shaken. Debris from the net was spread out on dry rocks in sunlight, and beetles were collected with an aspirator.

Like other known dryopids, these *Elmoparnus* were slow to move and the leaf debris required repeated examination as it dried in order to detect the beetles. The new *Pheneps* species and several species of Elmidae were collected in association with *E. collinsae*.

Pheneps antennalis Spangler and Steiner, NEW SPECIES

Figs. 12–25

Holotype male.—*Form and size*: Body flattened; thorax narrowed anteriorly; elytra diverging slightly posteriorly, widest at about posterior $\frac{3}{4}$, apices rounded. Length, 3.2 mm; width, 1.8 mm.

Coloration: Covered with fine, dense, short, recurved golden pubescence. Head, pronotum, and basal 2 antennal segments reddish brown; antennal segments 3–11, scutellum, and elytra dark brown. Pronotum with a dark brown apicomedia macula which is prolonged posteromedially in a narrow extension which converges and terminates at midlength. Ventral surface light yellowish brown except maxillary palpus, prosternum, sides of metasternum, apices of femora, and tibia infuscate. Abdomen darkly infuscate except a vague yellowish lateral macula on each sternum and a distinct reddish-yellow triangular area medially on sterna 1, 3, and 4; sternum 5 reddish brown. Tarsi yellowish brown except basal $\frac{1}{2}$ of last segment infuscate.

Head: Almost flat behind eyes, decurved between eyes; finely microreticulate and finely punctate, more densely so anteriorly; labroclypeal suture distinctly depressed. Clypeus subtruncate on anterior margin. Labrum broadly rectangular and indistinctly arcuately emarginate on anterior margin. Eyes prominent, hemispherical. Antenna (Fig. 12) densely pubescent; filiform; exceptionally long, longer than length of body. Maxillary palpus (Figs. 13–15) filiform, slightly shorter than antennal segments 1–3 combined; palpal segments, 4; 1st palpal segment shortest, about $\frac{1}{6}$ as long as 2nd palpal segment; 2nd palpal segment longest, about twice as long as 4th palpal segment; 3rd palpal segment about $\frac{1}{4}$ shorter than 2nd palpal segment; 4th palpal segment slightly longer than 3rd palpal segment, compressed laterally (Figs. 14, 15). Labial palpus very small (Figs. 16, 17); palpal segments, 3; 1st palpal segment about $\frac{1}{3}$ as long as 2nd palpal segment; 2nd palpal segment swollen and slightly longer than 3rd palpal segment; 3rd palpal segment partially compressed apically (Figs. 16, 17).

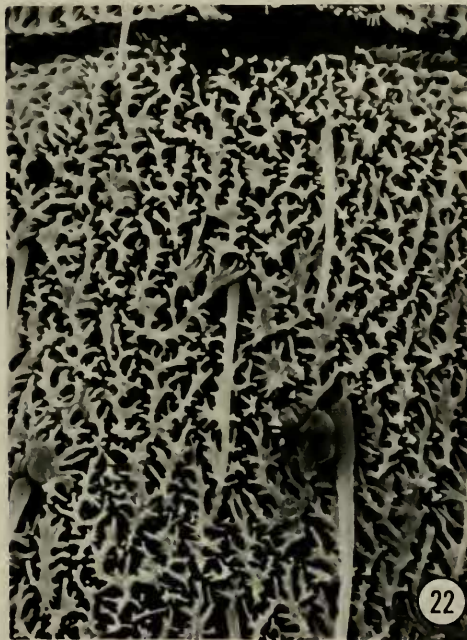
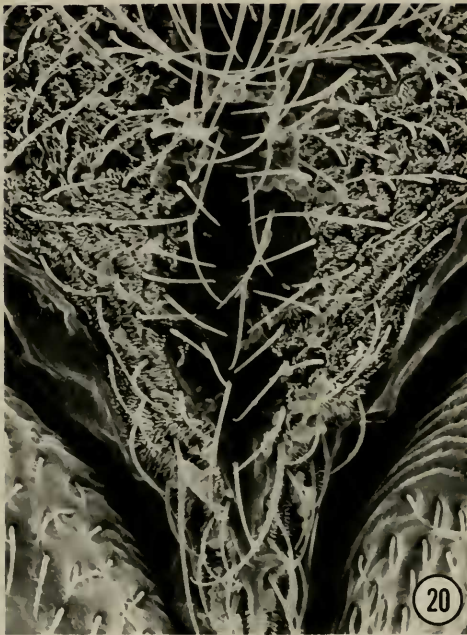
Thorax: Pronotum widest at base; discal area densely, finely punctate; discal punctures separated by $\frac{1}{2}$ – $1\times$ their diameter; disc moderately convex, depressed adjacent to posterolateral angles; finely and indistinctly margined ventrolaterally; anterolateral angles strongly rounded; posterolateral angles forming distinct right angles; apical and basal margins moderately bisinuate. Prosternum (Fig. 13) moderately short anterior of procoxae; covered by plastron setae (Figs. 20, 21). Prosternal process thin, keel-like; apex of lamina extending into mesosternum. Mesosternum narrow between mesocoxae; with very narrow median longitudinal cleft. Metasternum behind mesocoxae abruptly and strongly raised above plane of mesosternum; with very fine median longitudinal line extending along length of raised portion; surface microreticulate and finely, densely punctate. All legs with femora robust and swollen; all tibiae very slender and each bearing a low but distinct carina posterolaterally. Protibia and mesotibia grooved laterally on apical $\frac{3}{5}$. Protarsal segments (Figs. 18, 19) and mesotarsal segments 1 and 2 much



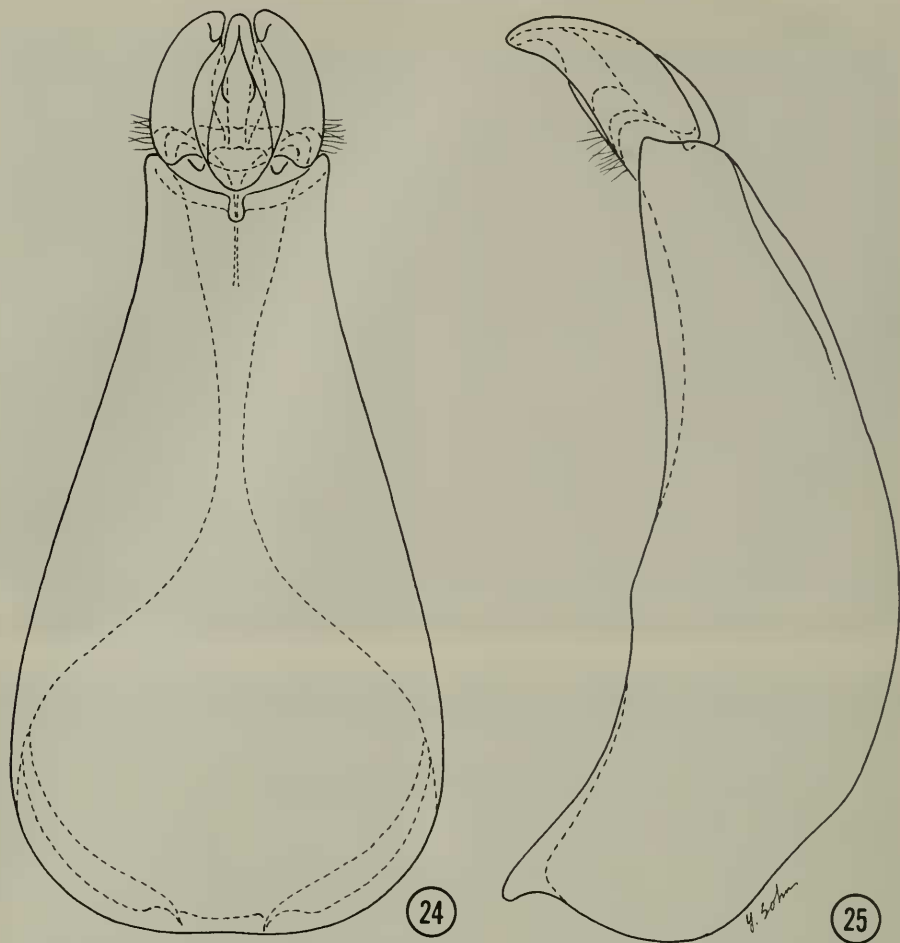
Figs. 16, 17. *Pheneps antennalis*. 16, Labial palpus, lateral view (450 \times). 17, Labial palpus, apex of last palpal segment, ventral view (2500 \times).



Figs. 18, 19. *Pheneps antennalis*. 18, Protarsal segments, dorsal view (180 \times). 19, Adhesive setal pads on protarsal segments 1-3 (800 \times).



Figs. 20–23. *Pheneps antennalis*. 20, Prosteron, plastron setae (400 \times). 21, Prosternal plastron setae (3000 \times). 22, Abdominal sternum 3, plastron setae (1000 \times). 23, Plastron setae on third abdominal sternum (10,000 \times).



Figs. 24, 25. *Pheneps antennalis*, male genitalia. 24, Dorsal view. 25, Lateral view.

broader than 3, 4, and 5 and densely pubescent beneath; metatarsi unmodified. Tarsal claws small, slender, and sharp. Scutellum slightly wider than long, flat; finely and densely punctate; rounded posteriorly. Elytra $4\times$ longer than pronotum and about $\frac{1}{3}$ wider at widest point than pronotum; humeri slightly gibbous; apices broadly rounded; each elytron with 5 indistinct striae on discal area paralleling elytral suture; punctures fine and very dense.

Abdomen: All sterna with surface sculpture as on metasternum; all sterna covered with plastron setae (Figs. 22, 23). Fifth sternum broadly emarginate along posterior margin; 6th sternum triangularly incised medially, resulting in 2 rounded lateral lobes; 7th sternum rounded at apex.

Male genitalia: Trilobate as illustrated (Figs. 24, 25).

Female.—Unknown.

Variations.—Among the 28 males in the type-series, the dark apicomedial macula varies in intensity, and the posteromedial extension does not extend to midlength on a few specimens. Specimens vary in length from 3.1 to 3.8 mm.

Comparative notes.—The elongate antennae of the male of this species will distinguish it immediately from males of the other two described species in the genus, *Pheneps gracilis* Darlington from Haiti, and *P. cubanus* Darlington from Cuba. Females of *P. antennalis* are unknown.

Type-data.—Holotype ♂: SURINAME: BROKOPONDO DISTRICT: Brownsberg Natuurpark, Witi Kreek, 200 m; 25 August 1982; W. E. Steiner/From leaf packs among rocks in partially shaded stream; rain forest valley/EARTHWATCH Suriname Expedition, August 1982; Collins, Early, Oberman, Pollock, Putnam, Steiner; USNM Type No. 100107, deposited in the National Museum of Natural History, Smithsonian Institution. Paratypes (27 ♂), same data as holotype.

Etymology.—The trivial name, *antennalis*, is derived from the exceptionally long and very obvious antennae on this species; no other described species of *Pheneps* is known with similarly long antennae.

Habitat.—Specimens of *Pheneps antennalis* were found in the same habitat with *Elmoparnus collinsae*, but the specimens of *P. antennalis* were concentrated in those leaf packs which were partially exposed to the air. The beetles were difficult to capture because they ran rapidly and promptly took flight when removed from the water.

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